IN THE UNITED STATES DISTRICT COURT

FOR THE EASTERN DISTRICT OF PENNSYLVANIA

UNITED STATES OF AMERICA	**:**	
v.	**:**	**CRIMINAL NO. 16-22**
YU XUE **TAO LI**	**:**	

GOVERNMENT'S MEMORANDUM ON THE SENTENCING GUIDELINES CALCULATION

The United States of America, by its attorneys William M. McSwain, United States Attorney for the Eastern District of Pennsylvania, and Robert J. Livermore and Katherine E. Driscoll, Assistant United States Attorneys, respectfully represent as follows:

I. Introduction

The issue presently before the Court is to determine the amount of the fraud for sentencing guidelines purposes pursuant to USSG § 2B1.1(b)(1). As the government's evidence proved, the biopharmaceutical information which the defendants stole was extraordinarily valuable and the product of many years of scientific research by hundreds of scientists at the victim corporation. The victim invested billions of dollars to develop that information. The government's economic expert witness opined that the stolen data was worth in excess of $1 billion. In documents seized by the FBI, the defendants themselves valued the data between $200 million and $2 billion. Moreover, there have been a number of comparable market transactions to purchase similar biopharmaceutical information, identified by both the defendants and the government expert witness, which fall within that range. As described below in more detail, the Court should find that the amount of the fraud exceeded $550 million under the sentencing guidelines.

At the hearing, the defendants argued that the amount of the fraud loss should be $0. In so doing, the defendants argued the wrong legal standard under the sentencing guidelines. The evidence which the defendants presented to the Court in support of their position that the documents were worthless was not credible. Furthermore, the defendants interjected a number of extraneous issues which are not pertinent to the Court's sentencing guidelines calculation. Rather than focus on the amount of the fraud and the amount which the victim invested to develop that information, the defendants presented such arguments as: (1) the victim did not suffer any pecuniary harm; (2) the victim never lost the ability to access the stolen information; (3) the defendants made relatively little money from the stolen data; (4) the defendants did not use all of the stolen data, and (5) the defendants had access to more important data which they did not steal. *None* of these factors pertain to the sentencing guidelines question calculation presently before the Court. *All* of these factors would be proper for the Court to consider when fashioning an appropriate sentence under 18 U.S.C. § 3553.[1] Therefore, the Court should reject these arguments in determining the amount of the fraud under the sentencing guidelines without prejudice for the defendants to raise these arguments under the 3553 factors analysis.

II. Procedural Background

Defendants YU XUE and TAO LI previously pleaded guilty to conspiracy to steal trade secrets in violation of 18 U.S.C. § 1832(a)(5). While the guilty plea agreement resolved the defendant's criminal liability, there is no agreement between the parties as to the applicable fraud

[1] Even if the Court accepts the government's sentencing guidelines calculation, the government has already conceded that the Court should not impose a sentence within that range. Pursuant to the plea agreements, the government has agreed not to recommend a sentence of more than 10 years for YU XUE or more than 7 years for TAO LI.

loss under the sentencing guidelines for the trade secret and otherwise confidential information stolen. Consequently, the Court held a three-day hearing for the parties to present evidence as to the fraud loss figure for sentencing guidelines purposes.

At the hearing, the government called five witnesses on the issue of fraud loss: (1) FBI Special Agent Andrew Haugen; (2) Dr. Joseph Tarnowski, Senior Vice President of GlaxoSmithKline (GSK); (3) Dr. Joseph Villafranca, an expert witness on the business aspects of the biopharmaceutical industry; (4) Dr. Chester Meyers, on the patent applications; and (5) Dana Trexler, the government's economic expert witness. The defendant called two expert witnesses: (1) Dr. Jeffrey Field, a scientific expert, and (2) Dr. David Blackburn, an economic expert.

In summary, the government contends that the value of the stolen data exceeded $550 million, primarily due to the extraordinary amount of funds which the victim corporation, GSK, invested in developing the stolen data and the fair market value of the stolen data. The defendants contend that the fraud loss for sentencing purposes amounts to $0 because the victim did not suffer any pecuniary loss from the fraud scheme. As described below, the defendants' position is legally and factually erroneous and the Court should accept the government's sentencing guidelines calculation.

III. Evidence

A. Landscape of Biopharmaceutical Products

As alleged in the indictment, YU XUE worked for many years as a scientist at GlaxoSmithKline (GSK) at its research facility in Upper Merion, Pennsylvania developing monoclonal antibodies, which are used to treat cancer and other serious diseases. YU XUE, a protein chemist, performed computer modeling for this biopharmaceutical research on

monoclonal antibodies. TR1 at 111.[2] Through her duties, she had access to a wide array of trade secret and confidential information pertaining to GSK's research into monoclonal antibody products under development. According to the terms of her employment agreement with GSK, YU XUE was not permitted to share any GSK data with anyone outside the company without authorization, even the results of her own research. Therefore, virtually every GSK document is considered confidential under these terms, even if it does not contain GSK trade secret information.

By their nature, monoclonal antibodies are very complicated to research and develop. TR1 at 108. Generally, it takes more than ten years of research and development involving the work of hundreds of scientists and clinicians to get a product to market. TR1 at 109-10, TR2 at 5. The products have to be proven thoroughly safe and effective in humans and pass regulatory muster. Biopharmaceutical companies, including GSK, typically spend between one and two billion dollars to develop one monoclonal antibody product. TR1 at 112, TR2 at 5. Moreover, the success rate for developing monoclonal antibodies is low - perhaps one in ten products under development reach the market. TR1 at 113, TR 2 at 6.

The reward for all of this research and development can be tremendous both medically and financially. TR2 at 6. Biopharmaceutical companies are able to invest these large sums into research and development because they control the intellectual property rights to the products developed. TR2 at 112. Some successful monoclonal antibodies reap $10 billion a year in revenue. TR2 at 7. For example, Genentech/Roche developed a product called

[2] The April 30, 2019 transcript will be referred to herein as TR1. The May 1, 2019 transcript will be referred to herein as TR2. The May 2, 2019 transcript will be referred to herein as TR3.

Herceptin which affects the HER2 receptor. In certain forms of breast cancer, Herceptin elicits a cascade of events which causes the tumors to self-destruct and die – a cure for a previously incurable fatal disease affecting millions of people worldwide. TR1 at 124. According to published reports, Genentech/Roche sells about $7 billion worth of Herceptin annually. GSK was attempting to replicate the same kind of medical and financial success developing a product targeting the HER3 receptor for other forms of cancer. TR1 at 124, TR2 at 7. The fact that some of the stolen products had failed to advance beyond clinical trials, such as the HER3 product, does not render the data worthless. TR1 at 138. It is common in the pharmaceutical industry for a new team of scientists to review the old data and discover a successful approach for a new product. TR1 at 139.

In order to reduce development costs for any particular product, GSK developed a series of developmental platforms that could be used in the development of many different products. A platform is a standardized system to develop and manufacture products and it serves as the foundation on which products can be built. TR1 at 113, TR2 at 12. For example, GSK's monoclonal antibody platform would allow it to build any type of monoclonal antibody. TR2 at 15. To reinvent the wheel for each product under development would be prohibitively expensive. TR1 at 114. GSK's monoclonal antibody platform is the result of more than twenty years work by hundreds of scientists and cost hundreds of millions of dollars to develop. TR1 at 115.

In addition to developing its own products, GSK also purchased products under development from other companies. It was not unusual for GSK to spend as much as $3 billion to purchase a company with one or more monoclonal antibodies in the pipeline. TR1 at 135. If

Renopharma had developed the monoclonal antibodies which they proclaimed they had developed (but actually had stolen), large companies would have been interested in purchasing Renopharma for a substantial price – perhaps a billion dollars or more. TR2 at 32. For example, Bristol-Myers Squibb purchased a company called Medarex for $2.2 billion in order to acquire a monoclonal antibody under development which was almost ready to be commercialized. TR2 at 34. That product, later named Yervoy, generates several billion dollars in sales annually. TR2 at 34.

B. The Stolen Data

In 2012, YU XUE and two of her friends, TAO LI and YAN MEI, created Renopharma with the intent to research and develop monoclonal antibodies. Like any new start-up biopharmaceutical company, Renopharma faced an incredibly difficult road to become a successful company by developing monoclonal antibodies. TR2 at 11. Forced to compete with large biopharmaceutical companies with multi-billion dollar budgets and hundreds of scientists, Renopharma had only a handful of employees and relatively little money. Moreover, having never successfully developed a product, Renopharma did not have roadmap to follow. In order to circumvent 20 years of research and development and billions of dollars in developmental expenses, YU XUE sent TAO LI and YAN MEI hundreds of GSK scientific documents pertaining to GSK's monoclonal antibody research, including documents relating to GSK's development platforms and particular products under development. These documents contained GSK trade secret and confidential information. By stealing the GSK information, Renopharma obtained billions of dollars' worth of research and avoided all of GSK's developmental costs to develop the stolen platforms and products. TR1 at 117, TR2 at 72. Some of these stolen documents were e-mailed while others were sent via electronic storage device. These

documents gave Renopharma a great leap forward down the road to being a successful company.

Renopharma's initial development plan centered on the sale of GSK's HER3 antibody. GX C, p. 2, GX K p. 18. As early as 2012, Renopharma told potential investors that they possessed "validated humanized antibodies targeting a certain important target" – which, in fact, was GSK's HER3 antibody. GX B.[3] Renopharma often used GSK research as their own research. Compare GX H (GSK presentation) with GX I (same presentation now labeled "Renopharma"). Renopharma renamed GSK's HER3 antibody "RENO-5602" in internal documents. GX F, p. 1. By using GSK's research, Renopharma received several million dollars in investor funds and government grants. Knowing that GSK had patented some of these drugs in the United States, the defendants reported that they intended to patent these drugs exclusively in China in order to circumvent GSK's intellectual property rights. GX J, p. 17. Later, Renopharma expanded their development plan to include other monoclonal antibodies. GX E, p. 20 (PD-L2 antibody).

Internal Renopharma documents showed that the defendants intended to reap hundreds of millions, if not billions, of dollars from the monetization of the stolen GSK information. GX C, p. 11, GX J, p. 14. The defendants acknowledged that Renopharma performed little of its own research and had relatively few funds to pay for outside research – certainly not the billion

[3] "Validated humanized antibody" is a term of art in the industry. Preliminary research on monoclonal antibodies is typically done with mice. However, a murine antibody is different than a humanized antibody. The first monoclonal antibodies developed in the 1980's worked well in mice, but unfortunately killed some of the human patients. One of the most challenging aspects of a product's development is humanization, that is, modifying a product to work safely and effectively in humans. To state that a product is already "humanized" means that a company has spent years of research and tens, if not hundreds, of millions of dollars to achieve this goal.

dollars needed to successfully develop their own product. Therefore, Renopharma relied on the stolen GSK data, especially GSK's HER3 antibody product, to support their projections. Renopharma's projections showed that the company could be worth as much as $10 billion based upon the stolen GSK data. GX C, p. 24. Fortunately, the FBI arrested the defendants and shut down Renopharma before the defendants' plans could materialize.

The stolen documents contained both confidential and trade secret information to three GSK platforms and more than a dozen GSK products under development. TR1 at 11. TAO LI's computer contained entire folders of GSK data. GX A, TR1 at 12. In total, TAO LI's computer contained more than 400 GSK documents. GX A; TR1 at 16. The stolen documents contained draft Investigational New Drug (IND) applications, technical evidence documents, and other documents containing detailed instructions on GSK's platforms and products. TR1 at 117. The IND documents were highly confidential and particularly useful because they described exactly what GSK intended to make and the recipe to make that product. TR1 at 127-28. The INDs and other stolen documents contained substantially more information, and more specific and highly confidential information, than what was contained in any publicly filed patent application. TR1 at 140, TR2 at 69. GSK invested 3.5 billion pounds, or more than $4 billion, to develop the biopharmaceutical information that the defendants stole and converted to Renopharma's use. GX L.

Most importantly, the stolen documents contained the blueprints to three GSK platforms: (1) the monoclonal antibody platform, (2) the antibody drug conjugate platform, and (3) the domain antibody platform. TR1 at 117-120, TR2 at 14. Having these three GSK platforms was critical to allow Renopharma the ability to develop a wide array of products. Renopharma

advertised the fact that they possessed these platforms. GX F, p. 1, 9 (monoclonal antibody platform); GX D (antibody drug conjugate platform). Furthermore, the information on specific GSK products under development in combination with the platforms would provide Renopharma with a roadmap of drug development. TR1 at 122. GSK's monoclonal antibody platform would allow Renopharma to develop any monoclonal antibody they wished, and would not be limited to antibodies which GSK was already researching. TR1 at 122. In certain instances, GSK research data from one antibody could be "cut and pasted" into research into a different antibody. TR2 at 75.

The government retained two expert witnesses to review the stolen information. First, Dr. Chester Meyers completed two reports, one 49-pages and one 32-pages. Each report described in exquisite detail the trade secret information contained in each document charged in the indictment and superseding indictment. GX P and GX Q. These reports also refuted any argument that the documents contained public information. Overall, these trade secrets included: (1) which assays, models, and processes were selected, designed, developed, and performed to characterize, select, and advance GSK lead and backup candidates; (2) GSK's decisions based upon the cost and risk/benefit considerations for future candidate advancement and portfolio/business decisions; and (3) the successful development of processes and procedures based upon strategic approaches and goals. GX P at 4. Dr. Meyers explained the trade secret information ignored by the defense expert. GX P at 6. Dr. Meyers then proceeded to describe all of the trade secrets in each of the stolen documents charged in the indictment. In fact, many documents contained multiple trade secrets. His second report contained similar analysis for the new documents charged in the superseding indictment. GX Q. These trade secrets include

experimental test results, strategic decisions, processes and procedures, and bioanalytical characterization. GX Q, at 5-6.

Second, Dr. Joseph Villafranca prepared a summary chart showing the scope and importance of the stolen information organized by GSK product under development. GX N. Dr. Villafranca described many of these documents as a "comprehensive" analysis of the GSK monoclonal antibody target under development, which included information on analytical data, animal studies, and predicted human dose. GX N. Dr. Villafranca provided more information on the importance of these documents during his in-court testimony. Dr. Villafranca explained that the main problem at small companies like Renopharma is lack of expertise and lack of funding. TR2 at 11. The stolen documents, specifically the GSK platforms, constituted an extraordinarily helpful roadmap to Renopharma in order to show how a monoclonal antibody is developed from start to finish. TR2 at 12.

C. Valuation

Dana Trexler was retained by the government to determine the value of the stolen data. Trexler prepared a 44-page report describing in detail her financial analysis of the stolen documents. GX R. The Appendix to her report totaled 1208 pages. After her extensive research into the matter, Trexler opined that the value of the stolen trade secrets totaled more than $1 billion.[4] GX R at 2. Admittedly, this was a difficult assignment. TR2 at 130-31. Regarding the information pertaining to specific GSK products under development which the

[4] Dr. Tarnowski also testified that GSK's investment in the stolen data and the fair market value for the stolen data exceeded $550 million. TR1 at 137. Dr. Villafranca, who was not retained to opine on valuation, was equivocal as to the value of the stolen data. Dr. Meyers was not asked to provide an opinion.

defendant stole, as testified to by Drs. Meyers and Villafranca, that data clearly had value. TR2 at 128. For a number of products, the defendant did not steal the complete recipe, but rather just part of the recipe. TR2 at 131. While there is value in that part of the recipe, it makes it difficult to accurately assess its worth, as trade secrets of this nature generally are not sold piecemeal. TR2 at 131, 227.

As a result, Trexler did not independently value these disaggregated, individual pieces of stolen trade secret information. Rather, Trexler took a collective approach – which is the most appropriate way under the sentencing guidelines to assess the value of all of the stolen trade secret and confidential information – and focused her analysis on the most comprehensive information in the stolen trade secret documents, that is, the platform technologies and INDs that would allow Renopharma to build any type of these products they wished. TR2 at 227. While individual trade secrets may be difficult to monetize, the trade secret data collectively created the platforms which could be easily monetized as the defendants intended to do through Renopharma.

In terms of the amount GSK invested into each of these developmental platforms, starting with the monoclonal antibody platform, Trexler determined that GSK invested roughly $370,000,000 in this platform over a 20-year period. TR2 at 119. That amount includes only the cost of the employees who worked on the platform and does not include any costs for infrastructure or equipment. GSK's domain antibody platform was acquired from another company called Domantis for $451 million. TR2 at 121. Similarly, GSK purchased the antibody drug conjugate platform from Seattle Genetics for $56.5 million. TR2 at 124. Trexler's calculations are consistent with the amounts other biopharmaceutical companies spend on developing these types of products and platforms. For example, one 2016 study showed that biopharmaceutical

companies typically invest $430 million in pre-clinical research on a monoclonal antibody product. TR2 at 136. That figure jumped to $1 to $2 billion when clinical research is included. TR2 at 136.

The defendants well knew that the stolen data was worth these substantial sums of money. GX C at 11-24, GX E at 25-29. Renopharma documents showed that the defendants believed that they could resell the stolen data for anywhere from $200 million to $2 billion. TR2 at 137. Industry data revealed the defendants' calculations to be accurate. TR2 at 137-38, 145. Many of the comparable deals fell in the $200 to $400 million range per monoclonal antibody transaction. TR2 at 140. Another means by which the defendants could have monetized the stolen data was through an initial public offering (IPO) of Renopharma. The defendants estimated that an IPO could generate more than $10 billion. GX C at 24, TR2 at 141.

In sum, the government's evidence proved that the fair market value of the stolen documents greatly exceeded the $550 million threshold. Moreover, the victims expended far more than $550 million to develop the trade secrets at issue. For these reasons, the Court should find that the amount of the fraud under the sentencing guidelines exceeded $550 million.

IV. Discussion

A. Government's Calculations

The base offense level for conspiracy to steal trade secrets is a Level 6. USSG § 2B1.1(a)(2). However, that level is increased based upon the applicable loss. For example, if the fraud loss exceeded $550 million, the base offense is increased by 30 levels. USSG § 2B1.1(b)(1). Pursuant to Application Note 3(A), fraud loss is defined as "the greater of actual loss or *intended* loss."

This is an *intended* loss case. For intended loss, it does not matter whether the loss materialized or even whether it was economically possible to impose such a loss. United States v. Higgins, 270 F.3d 1070, 1075 (7th Cir. 2001). In determining intended loss, the Court is obligated to carefully examine the defendants' subjective intent. Under the sentencing guidelines, intended loss refers to the defendant's subjective expectation. United States v. Geevers, 226 F.3d 186, 192 (3d Cir. 2000); United States v. Yeaman, 194 F.3d 442, 460 (3d Cir.1999). "The Court need only make a reasonable estimate of the loss. The sentencing judge is in the unique position to assess the evidence and estimate the loss based upon that evidence." USSG § 2B1.1, Application Note 3(C).

The guidelines offer the Court several ways to calculate intended loss.[5] One way is to take the "fair market value of the property unlawfully taken." USSG § 2B1.1, Application Note 3(C)(i). However, the fair market value of a trade secret can be difficult to determine because, by definition, there is no fair market for a trade secret. Trade secrets generally are not sold piecemeal. Thus, "the value of a company's trade secrets can be difficult to ascertain precisely." See Info. Strategies, Inc. v. Dumosch, 13 F. Supp. 3d 135, 143 (D.D.C. 2014) (citing Gomez v. Wilson, 477 F.2d 411, 420 n.51 (D.C. Cir.1973)); Avery Dennison Corp. v. Four Pillars Enter. Co., 45 Fed. Appx. 479, 485 (6th Cir. 2002) (unpublished) ("[d]amages in trade secrets cases are difficult to calculate"). For this reason, when calculating the fraud amount under the sentencing

[5] The sentencing guidelines offer six factors which the Court may consider in estimating the loss. USSG § 2B1.1, Note 3(C)(i) through (vi). Only two of those factors are pertinent here: (i) fair market value and (ii) development cost. No property was damaged so (iii) is not applicable. There was only one victim so (iv) is not applicable. The defendants did not steal securities so (v) is not applicable. As for (vi), the Court can consider the "scope and duration" of the offense generally, but that sheds little practical light on the valuation problem.

guidelines for theft of trade secret cases, the Court may calculate the loss by determining "the cost of developing that information." USSG § 2B1.1, Application Note 3(C)(ii). In this case, the government's evidence revealed that if the Court uses either the fair market value approach or the development cost approach, the fraud loss exceeded $550 million.

Finally, the Court must examine the stolen information as a whole and not piecemeal. In "calculating the amount of loss, the guidelines look not only to the charged conduct but to all relevant conduct by the defendant." United States v. Flonnory, 630 F.3d 1280, 1286 (10th Cir. 2011). Under the Guidelines, "relevant conduct" includes "all reasonably foreseeable acts and omissions of others in furtherance of ... jointly undertaken criminal activity" as well as "all acts and omissions ... that were part of the same course of conduct or common scheme or plan as the offense of conviction." U.S.S.G. § 1B1.3(a)(1), (2). As a result, because relevant conduct may include a broader range of conduct than the underlying conduct, a district court may properly consider charged, uncharged, and acquitted conduct." United States v. May, 706 F.3d 1209, 1213 (9th Cir. 2013) (quoting United States v. Peyton, 353 F.3d 1080, 1089 (9th Cir. 2003)). Therefore, in determining the fraud loss, the Court is compelled to look at the stolen data in its entirety which contained *both* confidential information and trade secret information. The Court should not myopically analyze each individual trade secret found in the stolen documents and ignore the value of the other confidential data stolen, as suggested by defense counsel and the defense expert.

In this case, the government's best evidence of intended loss is the defendants' own financial statements which outlined their intent. GX C, p. 11, GX J, p. 14. The defendants intended to sell the stolen data to a large biopharmaceutical company in China. GX B. The

defendants believed that the stolen data could be worth as much as $10 billion. GX C, p. 24. The defendants repeatedly reviewed comparable market transactions showing the value of the stolen information to be between $200 million and $2 billion for each validated monoclonal antibody transaction. GX C, p. 18-24. Based upon Renopharma's Five Year Development Plan, found in the seized documents, the defendants were planning multiple monoclonal antibody transactions. GX J at 14.

At the hearing, the defense counsel repeatedly argued that these documents were just unreliable "marketing materials" while at the same time suggesting that everything else the defendants did or said was reliable. Their argument boils down to: "believe everything we say which helps our case but do not believe anything we say which hurts our case." Of course, the law presumes the opposite. Statements against party interest are admissible under the Federal Rules of Evidence while self-serving hearsay is generally not admissible. See United States v. Kemp, 362 F. Supp. 2d 591, 594 (E.D. Pa. 2005) ("Defendants' own assertions of their innocence after they were confronted are self-serving, hearsay, and not admissible") (citing United States v. Hernandez, 176 F.3d 719 (3d Cir.1999), and United States v. Smith, 186 F.3d 290, 293 n. 1 (3d Cir.1999)). The truth is that the "marketing materials" were well researched and corroborated by the government's expert witness. The defendants used these marketing materials to obtain millions of dollars in government grants and investor funds because the stolen information was, in fact, worth the amount which the defendants stated that it was worth in their "marketing" materials.

The defendants also suggested to the Court that the defendants could not have sold any of the GSK data because GSK held the intellectual property rights to the products. Unfortunately,

this argument does not take into account the reality of the situation. For example, in 2014, the Office of the United States Trade Representative issued a report concerning intellectual property rights protection and enforcement. The report placed China on its Priority Watch List for intellectual property rights violators and noted that China has been on their Priority Watch List since the government began issuing these reports in 1989. With regard to pharmaceutical products, the report specifically found that "a wide range of U.S. stakeholders in China continues to report serious obstacles to effective protection of IPR in all forms, including patents, copyrights, trademarks, trade secrets as well as protection against unfair commercial use or unauthorized disclosure of test and other data generated to obtain marketing approval for *pharmaceutical products*." Pages 30-31 (emphasis added). Furthermore, the report found, "In particular, the theft of trade secrets remains a significant concern" and that thieves "continue to operate with relative impunity, often taking advantage of the theft in order to enter into unfair competition or disadvantageous business relationships with their victims." Page 31. Therefore, for the defendants to suggest that a U.S. patent would protect GSK's intellectual property rights in China is simply not accurate.

At the hearing, both the Court and defense counsel questioned why the government introduced Government Exhibit L, which is GSK's spreadsheet showing that they had invested about 3.5 billion pounds into the stolen products. The importance of this document is twofold. First, the document obviously is relevant for the Court to use to consider the amount which GSK invested in the stolen trade secrets pursuant to USSG § 2B1.1, Application Note 3(C)(ii). Second, the Court can also use this information to help determine the fair market value of the stolen data. If GSK spent $4 billion to develop these products on their own, then GSK certainly

would have paid $1 billion to purchase these developed products from another company such as Renopharma, thereby saving the company $3 billion in development costs. The information contained in Government Exhibit L also corroborates the defendant's own projections in Government Exhibits B, C, and J that the stolen data was worth between $200 million and $2 billion. The defendant's projections were a realistic assessment of the financial landscape of monoclonal antibody development given the amount which companies like GSK invest in these products and the amount which they are willing to pay to acquire these products.

The testimony of the government's expert witness merely confirmed what the defendants and GSK had already determined, that the stolen data was worth in excess of $550 million. Unlike the defense expert witness, Trexler thoroughly and meticulously reviewed all of the available evidence. TR2 112-113. She met with GSK scientists and the government's scientific experts to form her opinions. She reviewed comparable market transactions – many of the same market transactions which the defendants cited in their reports. Finally, she prepared a detailed and written expert report explaining her conclusions.

For these reasons, whether the Court adopts the fair market value approach or the development cost approach, the amount of the fraud exceeded $550 million for sentencing guidelines purposes.

B. Defense Evidence

The defendants argue that the fraud loss for sentencing guidelines purposes should be $0. During the hearing, the defendants presented the testimony of Dr. Jeffrey Field and Dr. David Blackburn as expert witnesses. Their testimony was deeply flawed and failed to rebut the government's evidence.

1. Dr. Field

To be blunt, Dr. Field's testimony was absurd. Dr. Field testified that all of GSK's trade secrets in the stolen documents could be found in a series of books which were published beginning in the 1980's. TR3 at 10. Dr. Field opined that, in order to successfully develop a monoclonal antibody, all the defendants needed to do was to purchase these books which are worth a few hundred dollars. In so doing, Dr. Field blindly ignored the fact that GSK and every other biopharmaceutical company in the world spends billions of dollars on the very kind of research the defendants stole in order to develop a successful monoclonal antibody product. There is no question that the books cited by Dr. Field or similar books were studied by every scientist developing antibodies at GSK and other biopharmaceutical companies and those books may provide the foundation for that research. However, to suggest that the advancement of research into monoclonal antibodies stopped in the 1980s, that all of these billions of dollars in corporate research is wasted money, and that these companies should simply stock their library with a few old books from the library in lieu of their billion dollar investments is simply not credible testimony.

The defendants' own exhibits demonstrate the absurdity of Dr. Field's testimony. Defense Exhibit 2 is a document which YU XUE transmitted to TAO LI. This document was

seized from TAO LI's computer when he was arrested. It is referenced in the indictment as document TL-3. The document is more than 90-pages long. Each page of the document is marked "Confidential." This document described in great detail a GSK monoclonal antibody product under development. The document provided a detailed description of the manufacturing process and process controls (what one might call a recipe). DX 2 at 3-9. The document described the material used in these processes. DX 2 at 9-14. The document further described other important features such as the manufacturing process (27), the characterization (29), and immunological activity (51). Obviously, none of this data was found in Dr. Field's books. Dr. Field made no effort to review or discuss the contents of this document. In contrast, Dr. Meyers provided a detailed analysis of this document and the trade secrets found therein in his report. GX Q at 11.

The reason for the flaws in Dr. Field's testimony stems from the fact that he lacks the necessary experience in developing monoclonal antibody products. Dr. Field has never worked for a biopharmaceutical company and has never successfully developed a monoclonal antibody product. TR3 at 44. As Dr. Villafranca testified, there is a vast difference between the preliminary research conducted in an academic environment and the biopharmaceutical research conducted by companies like GSK. TR2 at 13. Developing a tiny portion of a monoclonal antibody in a university laboratory is relatively easy work. Developing a monoclonal antibody which is proven safe and effective in humans is incredibly challenging. The work which companies like GSK perform is simply not taught in a university setting. TR2 at 13. That process must be learned by working in the industry – experience which Dr. Field does not possess. TR2 at 13.

An example will illustrate this concept. Dr. Field opined that a company like Renopharma would be able to find vendors who could perform the needed research. There is no question that certain processes can be performed by vendors. However, to suggest that Renopharma would be able to contract out all or a large portion of the work necessary to successfully develop a monoclonal antibody product does not account for the financial or regulatory reality of the situation. TR2 at 13. In order to gain regulatory approval for a new product, the developing company must have all the technical expertise and carefully oversee any contracted work to ensure that it is reliable. TR2 at 9. Dr. Field, because he has no experience in this arena, failed to consider this important factor in his analysis. This example illustrates how Dr. Field does not have the requisite expertise to render opinions on the biopharmaceutical processes found in the stolen documents.

Most importantly, Dr. Field failed to rebut Dr. Meyers's two reports, one 49-pages and one 32-pages, describing the trade secrets in the stolen documents in great detail. By definition, none of these trade secrets were contained in any of the books Dr. Field mentioned. As Dr. Villafranca testified, the roadmap provided in these stolen documents is not taught in the university. TR2 at 13. For Dr. Field to testify that the GSK monoclonal antibody platform could be found in a series of published textbooks, some of which were published in the 1980's, is simply not credible and not supported by the overwhelming weight of the evidence. TR3 at 11. The Court should reject his testimony and calculate the fraud loss based upon the stolen data as described in detail by Dr. Meyers and Dr. Villafranca, and as valued by Trexler.

2. Dr. Blackburn

The defendant's second witness was Dr. David Blackburn, an economic expert. The

focus of Dr. Blackburn's testimony concerned whether GSK suffered any economic loss from the theft. Dr. Blackburn opined that GSK did not. Unfortunately, the law and the facts undermine Dr. Blackburn's testimony.

First, Dr. Blackburn's testimony and the defendant's corresponding argument focused on the pecuniary loss to GSK - which is the incorrect legal standard. As described above, the correct legal standard is either the fair market value of the stolen data or the cost of developing that information. See USSG § 2B1.1, Application Note 3(C). Dr. Blackburn's testimony underscores the reason why the sentencing guidelines suggest that development cost is the appropriate approach to take in theft of trade secret cases – trade secrets are hard to value. See Gomez v. Wilson, 477 F.2d 411, 420 n.51 (D.C. Cir.1973). Courts have repeatedly emphasized that the victim need not have suffered loss for the defendant to have a recognizable gain under the sentencing guidelines. See United States v. Campbell, 765 F.3d 1291, 1297 (11th Cir. 2014) ("when the court cannot accurately estimate the victim's loss, it can instead use the defendant's gain for purposes of calculating the § 2B1.1(b)(1) offense level increase"); United States v. Parkin, 319 Fed. Appx. 101, 112 (3d Cir. 2009) (unpublished) (rejecting defendant's argument that the fraud loss should be $0 when the victim suffered no actual loss) (citing United States v. Antico, 275 F.3d 245, 271 (3d Cir. 2001)). In this case, the victim did lose something of value.[6] The victim had a right to the exclusive use of the intellectual property stolen by the defendants. The question here is how to appropriately calibrate that loss under the sentencing guidelines.

The hypothetical posed by the government on cross-examination exposed the legal and

[6] At the hearing, the defendants repeatedly mentioned GSK's post-indictment press release. Whether GSK was required to restate any earnings under federal securities laws is irrelevant to the issue of the appropriate sentencing guidelines calculation in the instant case.

equitable flaws in Dr. Blackburn's analysis. TR3 at 136. In that hypothetical situation, one company stole a particular process from another company and Dr. Blackburn opined that the fraud loss under the sentencing guidelines in that situation should be zero. TR3 at 136. This is the exact situation which the sentencing guidelines are designed to prevent. See United States v. Georgiadis, 933 F.2d 1219, 1226 (3d Cir. 1991) ("upward adjustment under § 2B1.1(b)(1) calibrates punishment to the magnitude of victim injury and criminal gains") (citing U.S.S.G. § 2B1.1, Background Commentary, "The value of property taken plays an important role in determining sentences for theft [and embezzlement] offenses, because it is an indicator of both the harm to the victim and the gain to the defendant."). When there is a theft of intellectual property, under the law, a defendant must be held accountable for the value of that theft either through the fair market value of the property stolen or the development costs incurred. To follow Dr. Blackburn's suggested approach would be contrary to the clear intent and purpose of the sentencing guidelines.[7]

Second, Dr. Blackburn opined that the government's expert should have myopically focused on the individual stolen trade secrets only – as opposed to the collective value of all of the relevant conduct by valuing the stolen platforms in their entirety. His opinion on this point

[7] Dr. Blackburn also suggested that Trexler double counted the value of certain items in her report. Contrary to Dr. Blackburn's testimony, Trexler's approach properly combined RENOPHARMA's two distinct benefits. Limiting RENOPHARMA's benefit to only the costs it avoided through its misappropriation understated the value it obtained from GSK's trade secrets, as RENOPHARMA stood to further profit from each market transaction it executed using the same GSK technology. The combination of these two amounts is consistent with the strategies of companies like GSK, who incur significant research and development ("R&D") costs with the expectation of recovering those costs and recognizing additional profit from the sales of products derived from those R&D efforts. Notably, Trexler only assumed a single market transaction at the low end of RENOPHARMA's expected range, when RENOPHARMA identified the opportunity for multiple transactions, each valued at up to $400 million.

may be the correct approach in a civil lawsuit, but under the "relevant conduct" provision of the sentencing guidelines, his analysis is legally incorrect in the criminal context which compels the Court to determine the value of the stolen trade secret and confidential information collectively. In "calculating the amount of loss, the guidelines look not only to the charged conduct but to all relevant conduct by the defendant." United States v. Flonnory, 630 F.3d 1280, 1286 (10th Cir. 2011). Under the sentencing guidelines, the Court must account for the value of all the trade secret information *and* all the confidential information stolen by the defendants. The government's economic expert applied the correct law by analyzing the loss of all of the relevant conduct by the defendants. Dr. Blackburn's approach is legally incorrect under the sentencing guidelines.

Third, Dr. Blackburn's testimony also suffered from his overall lack of familiarity with this case and the documents at issue. Dr. Blackburn testified that he reviewed only "bits and pieces" of documents. TR3 at 109. Dr. Blackburn admitted that he did not conduct a complete forensic financial analysis. TR3 at 109. Dr. Blackburn did not review Dr. Meyers's reports which delineated all the stolen trade secrets. TR3 at 132. Dr. Blackburn admitted that he did not have the expertise to value the stolen trade secrets' worth. TR3 at 112. Yet, Dr. Blackburn felt competent to opine that the loss in this case was zero? How could Dr. Blackburn possibly be in a position to testify that the loss is zero when he had not even examined the trade secrets at issue? The truth is that Dr. Blackburn's testimony lacked even the most basic of factual foundations and he simply was not in a position to opine as to the appropriate sentencing guidelines range in this case. In comparison, Trexler's report was meticulously documented and the Court should accept her testimony.

VI. Conclusion

Regardless of whether the Court uses the fair market value approach or the development cost approach, the conclusion remains the same. The defendants stole information which was extraordinarily valuable. Moreover, the defendants knew that the stolen information was extremely valuable and intended to profit handsomely from the sale of that information. The FBI fortunately arrested the defendants before that plan could come to fruition. The Government's evidence correspondingly proves that the value of this information for sentencing guidelines purposes exceeded $550 million and the Court should so find.

Respectfully submitted,

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CERTIFICATE OF SERVICE

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